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“Environomic\$”

Can the Marriage of Economics and the Environment End Happily Ever After?

By Tonia Horton

With the Pay-As-You-Throw program, you can make a household think twice about throwing out that banana peel or soda can, but will it truly benefit the communities involved or only generate more complaints?

A lot of hype has been floating around about Pay-As-You-Throw (PAYT), a new environmental program based on an old economic idea: You get what you pay for and you pay for what you get or, in the case of PAYT, you pay for what you give. Residents of PAYT communities pay for each gallon or pound of garbage disposed, rather than one flat fee. For example, residents might pay \$1 for each 30-gal. bag of trash they throw away. The idea is that residents will reduce the amount of garbage they throw away (i.e., by recycling or composting) to save money.

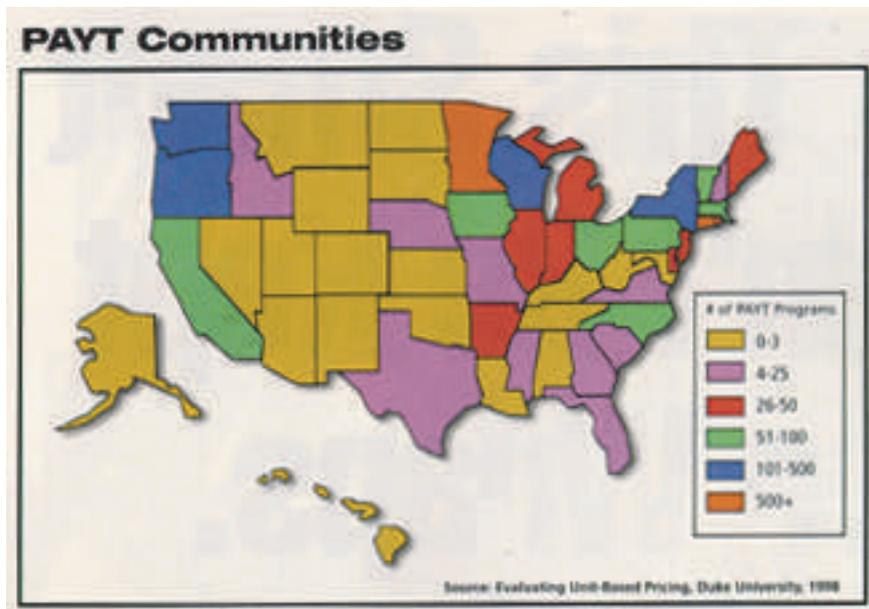
Research conducted by Marie Lynn Miranda and Sharon LaPalme in 1998 identified nearly 4,000 communities across the US using PAYT (unit-based pricing, variable-rate, or user-fee) programs. PAYT has even spread outside the US: Japan, China, Germany, Canada, Italy, and

Holland are among those implementing PAYT programs. Is PAYT just a lot of hype or does it actually benefit the communities that use it? Many skeptics are wondering if PAYT programs actually live up to communities' expectations.

The three major selling points of a PAYT program are known as the “three Es”: environment, economics, and equality. PAYT is billed as a program that can encourage residents to recycle and reduce waste, help communities pay for solid waste costs, and distribute costs more evenly among consumers.

Does PAYT Have True Environmental Benefits?

Perhaps the most important question is: Do residents in communities with PAYT recycle more and throw away less? The simple truth is that while every community might not experience success with PAYT nationally funded studies and independent reports on communities that use PAYT show that, in general, the program does indeed increase



recycling rates and reduce waste-generation rates.

Waste Reduction

Households have consistently been reported to throw away less garbage under PAYT programs than under flat-fee programs. In a 1997 Duke University study, Miranda and LaPalme obtained information from PAYT communities on the results of their individual programs. Communities reported data on several aspects of their PAYT programs, including before and after data on the amount of waste residents sent to landfills. In analyzing the data, Miranda and LaPalme excluded those communities that had established new recycling programs or significantly changed their old recycling or yardwaste programs as part of implementing PAYT. This ensured that the effects of a new or improved recycling program would not be considered in assessing the effectiveness of PAYT. During the first year of PAYT, communities in the Duke analysis aver-

aged a 14-27% decrease in the amount of waste sent to landfills.

While aggregate studies give an overall picture of how effective PAYT can be, testimonies from individual communities using PAYT reveal a wide variation in individual reduction rates. Some cities report huge success with PAYT (Wilkes-Barre, PA, reports a waste reduction of 120%), while other cities report more modest reductions (Gainesville, FL, reduced waste by 18%). In some cases, cities experience no change (such as Denver, CO) or even an increase in waste levels (Fremont, CA, reports a 25% increase).

Differences in success with PAYT are often the result of variations in the additional programs that communities offer (such as education, curbside recycling, yardwaste collection, or bulky-item pickup). Communities with more complementary programs normally experience greater success with PAYT (although there are communities that succeed with PAYT without using these programs).

Regardless of the number of programs they use, the majority of communities reports that the amount of MSW they collected did actually decrease after implementation of PAYT.

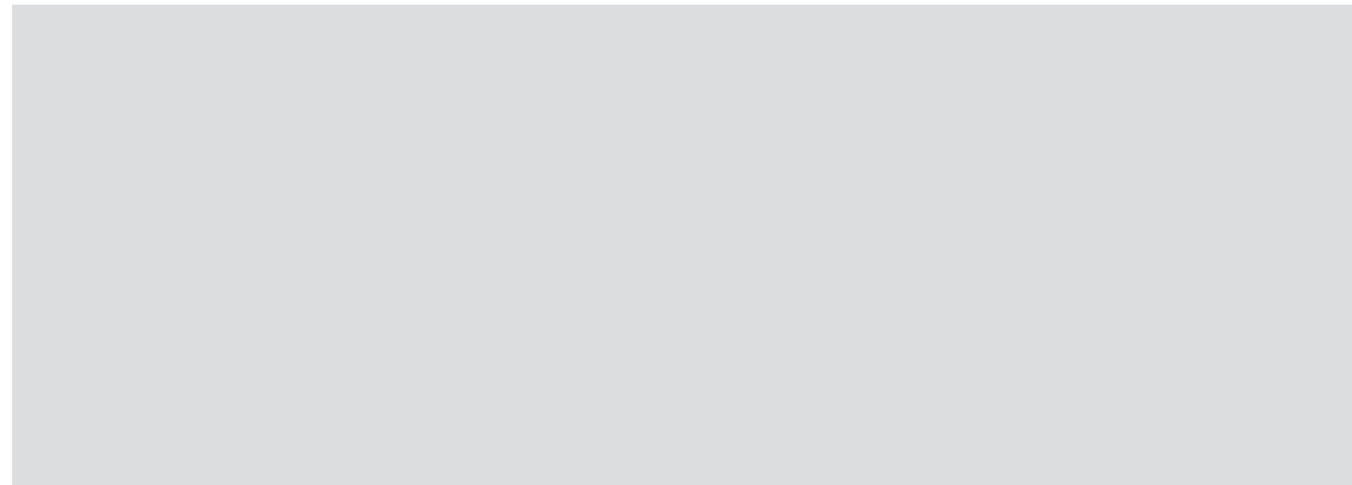
EPA's publication, *Pay-As-You-Throw Success Stories*, offers testimonials from MSW officials in individual cities with PAYT. The stories are specific examples of communities that have used PAYT to reduce their landfill-ingrates. In 1994, South Kingstown, RI, made the switch to PAYT, charging residents \$1 each for tags to be placed on garbage bags of up to 35 lb. or 33 gal. The city expanded the PAYT concept to include bulky waste and yardwaste; residents are charged \$0.05/lb. for bulky waste and \$0.035/lb. for yardwaste. In 1995, the annual amount of waste landfilled in South Kingstown dropped to 2,175 tons (a reduction of 71% from the 1992 figure of 7,608 tons).

The City of Falmouth, ME, implemented PAYT in 1992 after a unanimous vote by the city council approved the program. Falmouth charges residents \$0.91 for each 33-gal. bag and \$0.64 for each 20-gal. bag they throw away. Local supermarkets sell the bags so that purchasing them is easier and more convenient for residents. Since the implementation of this program, Falmouth's volume of land-filled trash has decreased by about 35%.

The City of Mount Vernon, IA (population 3,700), began using PAYT in 1991. Mount Vernon uses a two-tiered pricing system, billing residents \$7/mo. and charging \$1.75 per tag (for 30-gal./40-lb. containers). City officials report that after PAYT was instituted, residents sent almost 40% less garbage to landfills.

How Do These Households Reduce Waste?

Testimonies such as these, along with research conducted on PAYT programs, indicate that



PAYT is, in most cases, an effective tool to help communities reduce solid waste. An interesting question this poses is: "How do residents reduce waste?" Mount Vernon city officials give five methods that their residents use to reduce waste: (1) recycling household appliances, (2) taking recyclables not accepted by the city to places that do accept them, (3) backyard composting, (4) buying reusable materials, and (5) holding more yard sales.

A common concern is that households will respond to PAYT with illegal dumping. While it is true that some residents respond to the new fees by dumping, typically (and perhaps surprisingly) most cities that switch to PAYT report that illegal dumping is less of a problem than initially expected. Nearly half (48%) of the communities in the Miranda and LaPalme research indicated that they had experienced no change in illegal dumping after implementing a PAYT program, while less than one-fifth reported an increase in dumping.

Certain cities, such as those in which illegal dumping is a problem before PAYT is instituted, will probably be more likely to experience illegal dumping problems after PAYT is in place. Many PAYT communities use public

education or enforcement programs as effective tools both to keep instances of illegal dumping to a minimum and to ease the public concern that illegal dumping will be a major issue. Despite concerns over illegal dumping, the main waste-reduction technique that households use in response to PAYT tends to be recycling.

Recycling

A Portland, OR, experiment by S. Hong and R. Adams in 1993 evaluated the potential success of a PAYT program. They compared households under two types of pricing systems. The first group was charged a flat rate for garbage disposal (regardless of amount), and the second group was charged on a per-bag (unit-pricing) basis. Both groups were offered recycling services free of charge so that the decision (in either group) of whether or not to recycle wouldn't be influenced by the price of recycling. When the before and after recycling rates of the two groups were compared, the results showed that households charged per bag increased the amount of materials they separated for recycling, while households charged a flat rate did not change their recycling rates.

Empirical evidence supports this claim. As part of the 1997 Duke University study, communities reported recycling rates for the year just prior to PAYT implementation and for the first year after implementation. Again, communities with new or significantly altered recycling or yardwaste programs were excluded to ensure that changes in the recycling program would not affect the results of the analysis. Based on reports from these communities, Miranda and LaPalme calculated that during the first year of implementation, PAYT communities averaged a 32-59% increase in the amount recycled.

As with waste-reduction rates, changes in recycling rates vary from community to community and often depend on the types of additional programs offered. For example, Holland, MI (by complementing PAYT with curbside and drop-off recycling, yardwaste collection, and community education), was able to increase recycling by 500%. Almost no cities report a decrease in residential recycling, although some (Columbia, MO, for example) experience no change in recycling rates.

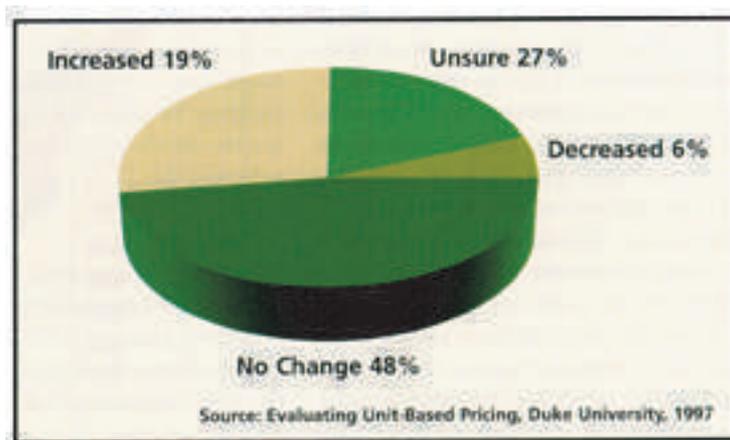
EPA's Pay-As-You-Throw Success Stories shows the diversity of communities that have

increased their recycling rates with PAYT. Large cities such as Gainesville, FL (population 96,000), Fort Collins, CO (population 100,000), and San Jose, CA (population 850,000), report increased recycling rates as a result of adopting PAYT. In addition to making the switch to PAYT, Gainesville added three new materials to its curbside recycling system: brown paper bags, corrugated cardboard, and phone books. Due to Gainesville's efforts, residential recycling rates rose by 2.5% in the first year of PAYT. Fort Collins started a PAYT program in 1996 in an effort to meet its 80-90% recycling goal. In the first six months, the percentage of households that recycled increased from 53.5% to 79%. In San Jose, where PAYT was implemented as part of a larger Recycle Plus program in 1993, the amount of recyclable material collected from residents more than doubled.

Smaller cities have also increased their recycling rates using PAYT. Falmouth, ME (population 8,500), has been a user of PAYT since 1992. Within the first few months of implementing PAYT, Falmouth experienced a jump in residential recycling of more than 50%. Foxboro, MA (population of 16,000), implemented a PAYT program at the beginning of 1998, shortly after the state of Massachusetts began its incentive program to encourage communities to use PAYT. In the first six months of PAYT, Foxboro residents more than doubled their rate of recycling (from 17% to 40%). As a result of Massachusetts's Municipal Recycling Incentives Program, the new 40% rate will allow Foxboro to receive approximately \$12,000 in state grants at the end of 1998.

A city that has seen exceptionally rapid results from PAYT imple-

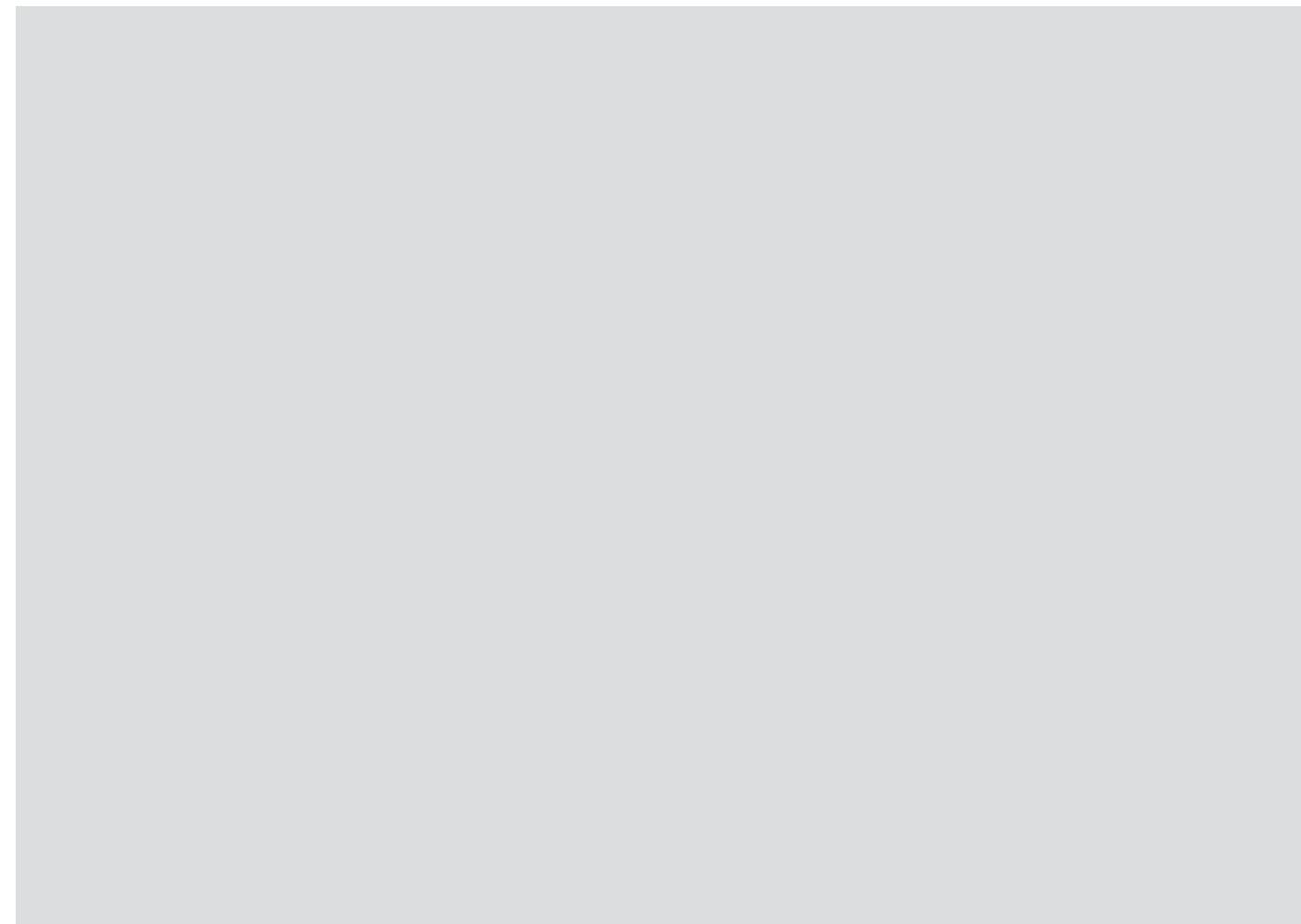
Changes in Illegal Dumping After Implementation of PAYT



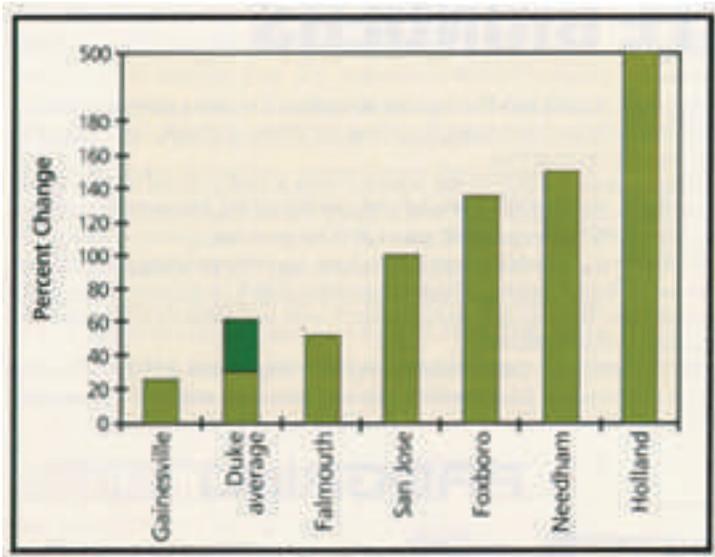
mentation is Needham, MA. Needham switched in June 1998, and--*in the first month*--month-increased the total amount of recyclable materials collected each week from three 40yd.³ containers to three 100yd.³ containers. In that same month, Needham residents recycled 25% more paper and about two-and-a-half times as much corrugated paper.

What Are the Economic Benefits of PAYT?

If PAYT offers environmental benefits, can it also help communities pay for solid waste costs? PAYT skeptics wonder if, with all the costs



Recycling Rates



associated with implementing a new solid waste program (not to mention additional programs), solid waste costs will rise even further. History shows that this is not the case. In fact, many communities consider PAYT in order to find a solution to the closing of a town landfill or an unexpected increase in solid waste costs.

One explanation for this is the cause-effect relationship between costs and revenues under PAYT programs. When residents in PAYT com-

munities generate more waste (increasing the city's collection and disposal costs), they pay more. So the city's increasing revenues cover its solid waste costs. Under a flat tax or a monthly fee, however, when residents generate more waste (and increase the city's costs), they still pay the same amount. This means that the city's revenues remain constant, despite increasing solid waste costs.

Cities concerned that this will mean increased revenue uncertainty (if they are unsure about how much residents will reduce waste) may use tiered pricing systems. Residents are charged a small flat fee (per month, quarter, or year) and a price per tag or bag for the amount of waste disposed. This ensures a certain level of revenue stability while still offering residents the incentive to decrease waste (though the incentive is reduced).

As waste generation falls, many cities report reduced solid waste costs after adopting PAYT. Before adopting PAYT, Falmouth, ME, paid \$146,000 annually for garbage collection. In the first year of PAYT, however, collection costs totaled only \$116,000, representing a drop in costs of over 20%. Additionally, disposal costs decreased as the amount of waste landfilled decreased (since tipping fees are on a per-ton basis), at a savings of \$50,000-\$88,000 per year.

The cost of additional programs adds to the total cost of any solid waste program. The city of Dover, NH, however, found that these programs were well worth the money they cost to implement. Even with several additional programs, such as a new curbside recycling program, bulky waste and yardwaste collection programs, and community edu-

Landfilling Rates

cation, total solid waste costs fell. The solid waste budget for Dover in 1990 was \$1.2 million. In 1991 (the year PAYT was implemented), Dover spent only \$878,000.

How Does PAYT Benefit Citizens?

When communities raise the idea of PAYT, the reaction of many residents is often negative. Many feel that they are being unfairly charged, especially if solid waste services have traditionally been paid for through taxes (and thus are perceived as free). After PAYT programs are in place, though, many residents change their tune. City officials in Merrimac and Needham (two Massachusetts cities that began PAYT programs in 1998) report that the comments they have received since implementation of PAYT have been almost all positive. Mick Mercer, a city official in Loveland, CO, comments that two weeks after implementation of PAYT in his town, he received phone calls from residents apologizing for their harsh initial reactions to PAYT. Many residents admitted they initially disliked the idea of PAYT because they were opposed to change or didn't understand the program, but they changed their minds once they understood the benefits of PAYT. Mercer reports that recent resident surveys find that over 80% of Loveland residents approve of the program.

In addition to its environmental and economic benefits, PAYT offers greater equality to residents and allows them greater control over their garbage bills. Under a flat tax or a monthly fee, households that throw away less trash end up subsidizing those that throw away more (since the rate is the same for each individual household). With a PAYT program in place, however, those who generate more waste pay more for disposal services. In fact, this inherent fairness is what makes PAYT users more likely to reduce waste and increase recycling. Many households can and do take advantage of this opportunity through recycling, composting, and other waste-reduction methods.

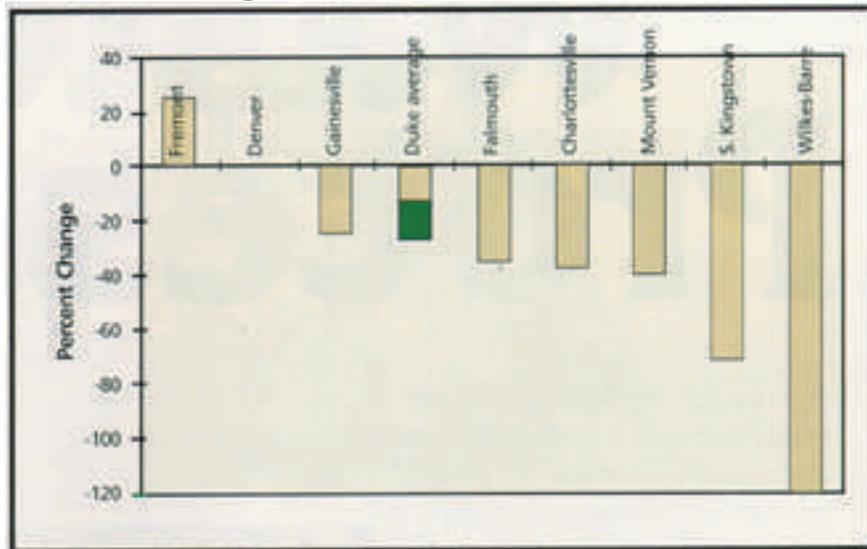
What Now?

While PAYT might not be for every community, the potential benefits cannot be ignored. PAYT offers a wide variety of benefits: environmental gains (by offering the incentive for residents to recycle more and throw away less), economic advantages (by allowing communities to better cover solid waste costs through accurately charging residents for solid waste services), and greater equity (by giving residents more control over their garbage bills and allowing them to pay for only the services they use).

Many state governments are recognizing these benefits. Recent involvement of some states in promoting PAYT (through mandates or grants) has increased the number of PAYT communities even further. For example, Minnesota, Iowa, Wisconsin, and Washington all mandate PAYT for certain communities. In addition, the state of Massachusetts recently began offering several types of incentives and grants for communities using or implementing PAYT. With such programs and with increased outreach efforts, the number of PAYT communities should continue to grow as more communities realize the potential benefits of this type of system.

References

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MSW

Tonia Horton is a writer who has conducted independent research on PAYT programs.